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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PARKER, FREDERICK JOHN

ART UNIT

PAPER NUMBER

1792

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/024,658	<b>Applicant(s)</b> CHOY ET AL.	
	<b>Examiner</b> Frederick J. Parker	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37-74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37-69 is/are allowed.
- 6) ☒ Claim(s) 70-74 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10-30-07 has been entered.

### ***Allowable Subject Matter***

2. Claims 37-69 were previously allowed and therefore remain in the allowable status.

### ***Claim Objections***

3. Claim 74 is objected to because of the following informalities: line 7, “adecreasing” is a typo. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 70 is rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al US 5,344,676.

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Kim et al teaches a method for applying nanodrops to a substrate to form a coating film or nanoparticles (= powder, col. 3, 23). A polymeric sol-type precursor material 9 comprises a decomposable base material with a solvent which is electrostatically sprayed as liquid droplets charged with a negative or positive polarity, and an electric field generated between the charged droplets and electrode needle 14 as described provides a corona spray because the electrons are produced by the electrode to flow and charge the droplets. The entire apparatus is contained within chamber 22. The target area is heated by heater 34 to promote reactions and specific heating temperatures dependant upon the decomposition temperature of any precursor form the desired coating material. There must inherently be a decrease in temperature as a function of distance from the heated substrate towards the outlet. Solvent evaporation and precursor decomposition would have inherently occurred as atomized particles approach, and prior to contacting, the substrate to satisfy **the requirement of forming a coating film or nanoparticles** as stated on col. 2, 20-23; abstract; col. 4,54; and elsewhere. Coating solution is transported/fed from supply 2 to the spray outlet using capillary tube device 10.

6. Claim 72 is rejected under 35 U.S.C. 102(b) as being anticipated by Spiller US 3754975.

Spiller teaches a method of coatings a substrate by supplying a coating solution under pressure using pump means 26/26' (col. 10,8-24; and elsewhere) comprising a solvent and decomposable metal salt ("precursor compound") which is sprayed (inherently involves "pressure feeding" via us of pump means 26/26') through a nozzle of a spray head onto the grounded, heated substrate to decompose the solution to form a coating, the heated substrate providing an increase in temperature from the spray outlet towards the heated substrate (and therefore inherently also a decreasing temperature gradient from the heated substrate towards the nozzle). The sprayed

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particles are guided by and adhere to the substrate by utilization of an electrostatic field between particles and substrate, the particle charging as described on col. 8, Example, etc.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness

9. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. Kim is cited for the same reasons previously discussed, which are incorporated herein.

Maintaining the field during cooling is not explicitly cited. However, it remains the Examiner's position that maintaining the electrostatic field during cooling of the applied coat would have been an obvious variation to maintain the particles applied in place to the heated substrate during the cooling process while additional volatiles are driven off. Furthermore, one of ordinary skill would NOT remove the field during the process of Kim because the decomposing droplets would not be attracted to the substrate and thereby defeating the teachings of Kim, so that removal of

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the field after the spray is completed and during the cooling process would have simply been an obvious variation within the purview of one of ordinary skill to provide completion of the coating process. It is well-established that the artisan is presumed to know something about the art apart from what the references disclose, *In re Jacoby* 135 USPQ 317; The conclusion of obviousness maybe made from “common sense” and “common knowledge” of the person of ordinary skill, *In re Bozek* 163 USPQ 545.

Furthermore, the solvent bearing precursor goes through the thermal gradient and contacts the heated substrate where the precursor undergoes decomposition and solvent evaporation. The latter entails the removal of heat by virtue of the inherent process of evaporation, causing at least some degree of cooling of the material deposited, a simple principle of evaporation. The claim simply does not require anything more as written, since no specific degree of cooling or outcome is required.

10. Claims 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al in view of Spiller which are cited for the same reasons previously discussed, and which are incorporated herein.

The process of Kim is provided in detail above. A specific statement that the material solution is pressure fed to an outlet is not provided. However, Spiller teaches a similar process of coating a heated substrate by supplying a coating precursor solution under pressure using pump means 26/26' for pressure feeding to provide the desired material to the substrate. Since both processes are directed towards the electrostatic deposition of precursor solutions towards and onto a heated substrate (inherently comprising a thermal gradient for decomposition of the precursor), to form a powder or film per Kim, it would have been obvious to one of ordinary skill

in the art at the time the invention was made to modify the process of Kim et al by incorporating the pump means 26/26' of Spiller to direct the precursor solution under pressure as an alternative means of delivering precursor solution to a heated substrate with the expectation of providing an equivalent coating or powder thereon.

### *Response to Arguments*

Applicants arguments have been considered. Applicants assert a prior art reference "must contain all of the elements of the claimed invention. It is simply apparent Kim et al does so relative to claim 70 and Spiller to claim 72 if one reads the content and context of the reference, and as simply laid out in the rejection above. Multiple assertions that Kim equates nanoparticles with liquid clusters is directed to a very specific portion of the overall process and ignores the remainder of the teaching directed to forming films or nanoparticles. Such assertions are disingenuous and circumvent the substance of the Examiner's rejection and the entirety of the prior art teaching. Similarly, relative to claim 72 since the substrate is heated, there must necessarily be heat rising from the heated substrates which creates a gradient the approaching spray encounters. Heat rises, a well-known scientific principle, and therefore a coating solution approaching the heated substrate experiences greater heat as it closes in on the target, the heat causing evaporation with increased rate as the heat experienced increases. This is inherently and necessarily a "gradient", and the gradient is of a decreasing temperature provided from the heated substrate surface relative to the outlet. In fact, this is exactly what is described by Applicants, Specification page 4, 25-30. Further, Applicants fail to supply a sufficient response to the Examiner's rejection by explaining/ proving any rationale or scientific basis why the method of

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the prior art fails to have a gradient while Applicants, virtually identical system/ process does.

Thus Applicants arguments on page 11, Remarks, are simply mystifying.

Finally, the Examiner most strenuously disagrees that a reference must state each and every limitation in an obviousness rejection. This is simply untrue. Motivation for obviousness may be derived either from an implicit/ explicit teaching, suggestion, or motivation in the references themselves OR in the knowledge generally available to one of ordinary skill, In re Kotzab, 55 USPQ2d 1313 and MPEP 2143.01. Applicants are reminded that KSR 82 USPQ2d 1396 forecloses the argument that a specific teaching, suggestion, or motivation is required to establish a prima facie case of obviousness. KSR establishes that design incentives, market forces, predictability, use of ordinary skill and common sense, and ordinary capabilities or ingenuity of one skilled in the art articulated by the Examiner may be relied upon to support obviousness. Motivation for combining references under 35 USC 103 may be derived from (1) the nature of the problem to be solved, (2) the teachings of the prior art, or (3) the knowledge of persons of ordinary skill in the art, In re Rouffet 47 USPQ2d 1453 and MPEP 2143.01. Obviousness requires only a sufficient basis for a reasonable expectation for success, MPEP 2143.02. Finally, the Examiner states the obvious: that patentability requires not just simply a difference from the prior art but a patentable difference that provides a clear line of demarcation between the prior art and the claims of the instant application. Claims 70-74 fail in this regard, and thus are rejected.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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